

requiring health effects testing of 1,2,3,4,7,7-hexachloronorbornadiene under section 4(a) of the Toxic Substances Control Act (TSCA). EPA is not at this time initiating rulemaking under section 4(a) to require health effects testing of 1,2,3,4,7,7-hexachloronorbornadiene. EPA believes that the present limited manufacture and controlled disposal of this chemical is not expected to cause substantial or significant human exposure or present an unreasonable risk of injury to human health or the environment. However, EPA is planning to initiate rulemaking under sections 8(a) and/or 5(a) (2) of TSCA to monitor any significant changes in these conditions.

FOR FURTHER INFORMATION CONTACT: Edward A. Klein, Director, TSCA Assistance Office (TS-799), Office of Toxic Substances, Environmental Protection Agency, Room E-543, 401 M St., SW., Washington, D.C. 20460; Toll Free: (800-424-9065); In Washington, D.C.: (554-1404), Outside the USA: (Operator 202-554-1404).

SUPPLEMENTARY INFORMATION: EPA is not at this time initiating rulemaking under section 4(a) of TSCA for 1,2,3,4,7,7-hexachloronorbornadiene because of limited production and low potential for human exposure.

I. Background

Section 4(a) of the Toxic Substances Control Act (TSCA) (Pub. L. 94-469, 90 Stat. 2003 *et seq.*, 15 U.S.C. 2601 *et seq.*) authorizes EPA to promulgate regulations which require manufacturers and processors to test chemical substances and mixtures. The data developed as a result of such testing will be used by EPA to evaluate the risks that these chemicals may present to health and the environment. Section 4(e) of TSCA established an Interagency Testing Committee (ITC) to recommend to EPA a list of chemicals to be considered for the promulgation of test rules under section 4(a) of the Act. The ITC may designate up to 50 of its recommendations at any one time for priority consideration by EPA. EPA is required to respond within 12 months of the date of a priority designation, either by initiating rulemaking under section 4(a) or publishing in the Federal Register reasons for not doing so.

1,2,3,4,7,7-Hexachloronorbornadiene (HEX-BCH) (CAS No. 3389-71-7) was designated for priority testing consideration in the Thirteenth Report of the ITC, submitted to the EPA Administrator on November 8, 1983 and published in the Federal Register on December 14, 1983 [48 FR 55674] (Ref. 1). The ITC recommended that HEX-BCH

be tested for subchronic health effects including neurotoxicity, and for biochemical effects including enzyme-inducing capabilities. The ITC did not recommend HEX-BCH for environmental effects testing.

The ITC based its health effects testing recommendation for HEX-BCH on the concern that possible human exposure may result from releases of HEX-BCH to the environment through waste discharges from the manufacturing plant. The chemical has been found in the waters and sediment of the Mississippi River and its tributaries, and in edible portions of fish caught in the Mississippi. In addition, HEX-BCH waste was disposed of in surface landfills for many years and traces of the chemical have been identified in private well water in the vicinity of the surface landfills.

II. Assessment of Exposure

HEX-BCH has been produced in the U.S. solely by the Velsicol Chemical Corporation at one plant location in Memphis, Tennessee. The only use for HEX-BCH is as an intermediate in the manufacture of the pesticide endrin. The ITC report stated that endrin production was 2 million to 4 million pounds in 1981 (Ref. 1). Based on this production volume of endrin, the ITC estimated that the annual production of HEX-BCH in 1981 was 1.5 million to 3 million pounds.

In 1978, endrin was classified as a restricted use pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (Ref. 2). The restrictions on its use and application are very limiting and have caused a sharp reduction in its use in the U.S. (Ref. 3). According to Velsicol, there is no longer any production of endrin in the U.S. (Ref. 4). Therefore, because the use of endrin has decreased, the large scale production of HEX-BCH is no longer necessary (Refs. 3 and 5). Velsicol notified the ITC, during the preparation of the Thirteenth Report, that HEX-BCH is no longer manufactured by Velsicol. In a letter dated October 3, 1983, to the ITC, Velsicol stated that HEX-BCH has not been produced since May, 1982 and that they currently have no plans to produce it in the future (Ref. 6). In addition, the Agency is not aware of any importation of HEX-BCH into the U.S.

However, due to a market demand for endrin in Mexico, Velsicol decided to resume production of HEX-BCH at its plant in Memphis (Ref. 7). The HEX-BCH is converted to isodrin at the Memphis plant and then shipped to Mexico for conversion to endrin. Isodrin is the immediate precursor to endrin.

[OPTS-42060; FRL 2690-4]

1,2,3,4,7,7-Hexachloronorbornadiene; Response to the Interagency Testing Committee

AGENCY: Environment Protection Agency (EPA).

ACTION: Notice.

SUMMARY: This notice is EPA's response to the Interagency Testing Committee's recommendation that EPA consider

The Mexican-produced endrin is then sent to the U.S. for use in U.S. markets. Velsicol notified EPA that this production run of HEX-BCH began in mid-March, 1984 and was completed at the end of May, 1984. The amount of HEX-BCH produced was less than 300,000 pounds (Ref. 8).

Subsequently, Velsicol, in a letter of August 14, 1984, voluntarily cancelled their U.S. pesticide registrations for technical endrin and for two of their three endrin formulations (Ref. 9). The remaining formulation will be cancelled no later than August 1, 1985 because of prior commitments Velsicol has made to customers. Because, at present, the only use for HEX-BCH is as an intermediate in the production of endrin, it is clear that the possibility of any future manufacture of HEX-BCH is small.

In addition, Velsicol states that HEX-BCH is produced in a closed system and that the conversion to isodrin also takes place in that system without isolation of the HEX-BCH intermediate (Ref. 7). Velsicol has advised EPA that there are seven employees, working in various HEX-BCH processes, who are potentially exposed to HEX-BCH. Three of these workers are involved with production of HEX-BCH, three are involved in the next reaction step to isodrin and one worker is involved in waste disposal. Velsicol estimates that exposure is minimal and that the only potential worker exposure is during sampling and waste disposal. The company estimates that exposure during sampling is no more than 15 minutes per 8-hour day. Total exposure from all sources is estimated to be 15 to 20 minutes per 8-hour day for each worker (Ref. 4, exhibit VI).

The aqueous and solid wastes from the process are managed under treatment and disposal systems which are closely controlled and monitored by the manufacturing company, the State, and Federal authorities.

The aqueous wastes from the process are pretreated at the Velsicol facility and then sent to the Memphis North Wastewater Treatment Plant for further treatment (Ref. 10). The operation and subsequent discharges from the Memphis North treatment facility are controlled under the National Pollution Discharge Elimination System (NPDES) program (Ref. 11). Tennessee's NPDES program was approved by EPA in 1977 (Ref. 12). In addition, the city of Memphis issued a permit to Velsicol allowing up to 30 pounds per day of HEX-BCH to be discharged to the Memphis North facility for treatment (Ref. 13). The discharges during the recent limited production have averaged 2 to 3 pounds per day (Refs. 7, 8, and 13).

Further, both Velsicol's pretreatment and the treatment of the HEX-BCH wastes by the Memphis facility result in a significant reduction of HEX-BCH levels in the effluent going into the Mississippi River (Ref. 10). The levels of HEX-BCH in the effluent entering the Mississippi River, for the period of mid-March, 1984 to the end of April, 1984, ranged from 5.8 ppb to <1 ppb. The average effluent concentration of HEX-BCH, for the 25 days for which analyses are available, is 3.02 ppb. The Agency believes, given the large dilution factor of the Mississippi just south of Memphis, and the low amount of HEX-BCH entering the river, that this concentration of HEX-BCH will not present an unreasonable risk to health or the environment (Ref. 13).

The solid wastes containing HEX-BCH are either buried in an approved secure landfill for hazardous wastes or are incinerated. Approximately 70 percent of the solid wastes go to the landfill (Ref. 4, exhibit V).

However, while the present production and disposal practices appear to be sufficient to prevent unreasonable risk to human health, disposal practices associated with past IIEX-BCH production have not been adequate to prevent contamination of private surface wells or fish species which are found in rivers in the area of the disposal site.

Prior to 1977, HEX-BCH wastes were deposited at the Hardeman County, Tennessee toxic waste dumpsite. This waste disposal site is situated on a 243 acre tract of land owned by Velsicol, 27 acres of which were utilized for actual waste disposal (Ref. 10, exhibit V). During the period in which this site was used, 1964-1973, an estimated 300,000 to 500,000 barrels of liquid and solid waste were dumped. These barrels, some of which contained HEX-BCH wastes, were buried in shallow trenches dug into the ridges at the dumpsite (Ref. 14).

In 1966, the Federal Water Pollution Control Administration requested that the U.S. Geological Survey (U.S.G.S.) investigate the disposal operation at the Hardeman site. The study was to determine potential for contamination of the hydrologic environment (Ref. 10, exhibit V). The conclusion from this 1966 study was that there was no possibility for any existing water table wells to produce contaminated water in the dumpsite area (Ref. 10, exhibit V).

However, in 1977, 4 years after the closure of the dumpsite, the Tennessee Division of Water Quality Control and the U.S.G.S. began a second study to reexamine the disposal site. The conclusion from the earlier study was disputed. The 1977 report found that

chemical analysis of ground water from the aquifer indicated the presence of organic contaminants from the disposal site (Ref. 10, exhibit V).

In 1978, as the second report was being completed, residents in the vicinity of the disposal site reported strange odors and tastes from their private well water. As a result, the State of Tennessee and EPA collected samples from selected residential wells. As many as 13 organic contaminants, including HEX-BCH, were detected in the local wells (Ref. 4, exhibit III).

Following the detection of the contaminants, an environmental assessment program was initiated by Velsicol in cooperation with the Tennessee Department of Public Health and Region IV of EPA. The investigations in the assessment program included extensive water sampling, aquatic and terrestrial biological effects, surface water monitoring, runoff and sediment transport, air quality monitoring and hydrogeologic studies. As a result of the environmental assessment program and other data generated by Tennessee and EPA, it was determined that the primary routes for contamination from the Hardeman site were via the ground water and surface runoff (Refs. 4, exhibit III and 10, exhibit V).

After the environmental assessment which lasted for 2 years, was complete several remedial methods of controlling the contaminants from the site were evaluated. It was decided that the remedy which was the most efficient and which would directly control the two major identified pathways of contamination from the site, was to install a low permeability cap over the waste disposal site (Ref. 10, exhibit V). The State of Tennessee accepted Velsicol's proposal in July, 1980 (Ref. 15).

The capping took place July, August, and September, 1980. The cap was constructed of low permeability clay which covered the dumpsite to a depth ranging from 1 to 3 feet. The cap was then covered with a 6 inch layer of topsoil in order to facilitate development of a vegetative cover (Ref. 10, exhibit V). The cap serves as a shield to prevent infiltration by precipitation, volatilization to air, surface runoff and contact by wildlife. In addition, the 243 acre Velsicol property is fenced and posted to keep people out.

As a part of the environmental evaluation and the subsequent capping procedure, Velsicol agreed to a 3-year monitoring program which included the testing of various environmental factors every quarter year from July, 1980 to

July, 1983. The monitoring was conducted by Velsicol to a private environmental engineering company.

The initial 3-year monitoring program is completed. Tests show that the clay cap has reduced the infiltration of water by more than 99 percent. This surpasses the design, which called for at least a 97.6 reduction (Ref. 10, exhibit II). The tests showed that contamination is not migrating beyond a previously defined ground water plume in the vicinity of the disposal site. In addition, the residents in the area are no longer dependent on ground water from the dumpsite area. A water line was built in 1979 which connected the residents to the water supply of the city of Toone, Tennessee (Ref. 10, exhibit II).

The conclusions from the 3-year monitoring period, and from pre-cap and cap installation monitoring, show a marked reduction in the concentration levels of the organic contaminants, including HEX-BCH, in the ground water and in stream sediment and surface water. In many cases there is an absence of contamination (Ref. 4, exhibits II and III). The capping has proven to be an effective remedial measure in controlling the contamination from the Hardeman waste disposal site. In an environmental monitoring and assessment report, dated June 1984, a continuation of monitoring is recommended (Ref. 4, exhibit II).

In September, 1983, the Velsicol Hardeman County waste disposal site was included on the National Priorities List (NPL) pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (42 U.S.C. 9601 *et seq.*) (Ref. 16). The NPL serves, primarily as an informational tool for use by EPA in identifying disposal sites that appear to present a significant risk to public health or the environment. Each site was scored and then ranked and placed into one of 9 groups, according to its priority. The Hardeman site is ranked in group 4, indicating that it is not a top priority site for immediate remedial action. The current response status of the site, according to the NPL, is that conditions are currently being addressed through EPA-sanctioned voluntary actions by parties responsible for wastes at the site (Ref. 17). In addition, the NPL states that when the monitoring period ends, Velsicol, the State, and EPA will review the effectiveness of the cap. Any additional measures to control the site will be discussed at that time, including the possible need for decontaminating the ground water (Ref. 18).

III. Decision Not To Test

EPA has decided that testing of HEX-BCH under section 4(a)(1)(A) or 4(a)(1)(B) of TSCA is not warranted at this time because production and the potential for human exposure are extremely limited. Therefore, the likelihood of unreasonable risk to humans is small.

From May, 1982 until March, 1984, Velsicol did not manufacture HEX-BCH. Then, after an interval of nearly 2 years, Velsicol began producing a limited quantity of the chemical at one manufacturing site. This HEX-BCH was produced solely for use as an intermediate of isodrin, which in turn, is solely for export and used solely in the production of endrin. The production run lasted for less than 3 months, was limited to under 300,000 pounds, and resulted in minimal occupational exposure. Subsequent to this production run, Velsicol voluntarily cancelled their pesticide registration for technical endrin, which means that it is possible that they will never produce HEX-BCH again. The manufacturing wastes, both aqueous and solid, are handled under adequate waste management facilities. Furthermore, the presence of HEX-BCH in private well water, reported in 1978, is attributed to the poor waste disposal practices followed during the 9 years, in which the Hardeman dumpsite was used to dispose of HEX-BCH. In addition, the presence of HEX-BCH reported in fish in a 1978 study is also a result of contamination from the Hardeman site (Ref. 19).

Since 1978, when the 2-year environmental assessment was begun, through the remedial action of capping the site, followed by 3 years of extensive monitoring, studies show that contamination from the Hardeman site has been effectively controlled. Finally, review of the control measures and any future remedial actions are to be handled under the authority of CERCLA.

In light of the current limited production, the adequate waste disposal practices, and the on-going evaluation and investigation at the Hardeman waste disposal site, EPA has determined that it can reasonably be predicted that under present conditions HEX-BCH will not present an unreasonable risk of injury to human health. EPA has, therefore, decided not to proceed with section 4 rulemaking at this time. However, should the current situation change such that EPA has cause to be concerned about substantial production and/or increased exposure, then EPA reserves the right to propose a test rule or take other action to obtain health and/or environmental effects test data

on HEX-BCH. In addition, EPA is planning to initiate rulemaking pursuant to sections 8(a) and/or 5(a)(2) to TSCA to monitor for such changes by requiring the notification of the Agency prior to any future manufacture, importation or processing of HEX-BCH in the U.S.

In addition, EPA's Office of Solid Waste is evaluating the available health and monitoring data on HEX-BCH to determine whether additional action should be taken under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA), as amended (42 U.S.C. 6901 *et seq.*) (Ref. 20). This review and evaluation by the Agency will determine whether HEX-BCH should be listed as a generic or specific hazardous waste under RCRA. Any additional rulemakings for HEX-BCH will appear separately from this Notice.

IV. References

- (1) USEPA. Thirteenth Report of the Interagency Testing Committee to the Administrator: Receipt of Report and Request for Comments Regarding Priority List of Chemicals. Federal Register, December 14, 1983 (48 FR 55674).
- (2) USEPA. Pesticide Uses by Regulations: Pesticide Use Restrictions-Final Rule. Federal Register, February 9, 1978 (43 FR 5788).
- (3) ITC. Memorandum. 1,2,3,4,7,7-Hexachloronorbornadiene (HEX-BCH). Martin Greif, Executive Secretary, ITC, to File. September 27, 1983.
- (4) Velsicol. Hexachloronorbornadiene—Additional Information. Letter from Alfred A. Levin, Velsicol Chemical Corporation, to Richard Troast, Office of Toxic Substances, EPA, and exhibits I-IV (exhibits IV and V Confidential Business Information) (CBI). June 25, 1984.
- (5) USEPA. Memoranda. 1,2,3,4,7,7-Hexachloronorbornadiene. L. Borghi to TSCA Interagency Testing Committee, Attention: Dr. E. Weisburger. August 16, 1983 and August 24, 1983 (clarification).
- (6) Velsicol. Letter from Alfred A. Levin, Velsicol Chemical Corporation, to Dr. Martin Greif, Office of Toxic Substances, EPA. 1,2,3,4,7,7-Hexachloronorbornadiene. October 3, 1983.
- (7) Velsicol. Letter from Alfred A. Levin, Velsicol Chemical Corporation, to Richard Troast, Office of Toxic Substances, EPA, May 14, 1984.
- (8) Velsicol. Letter from Alfred A. Levin, Velsicol Chemical Corporation to Richard Troast, EPA. Hexachloronorbornadiene. May 31, 1984.
- (9) Velsicol. Letter from M. Olav Messerschmidt, Velsicol Chemical Corporation to Douglas Camp, EPA. Voluntary Cancellation. August 14, 1984.
- (10) Velsicol. 1,2,3,4,7,7-Hexachloronorbornadiene, Response to the Thirteenth Interagency Testing Committee. Letter from Alfred A. Levin and exhibits I-XI (exhibits I, II, and IV CBI). February 6, 1984.
- (11) USEPA. Computer Printout from EPA Region IV, P.C.S. Quick Look Report on

NPDES/RCRA Waste Treatment Facilities in Tennessee. July 3, 1984.

(12) USEPA. Letter from Douglas M. Costle, EPA Administrator, to the Honorable Ray Blanton, Governor of Tennessee. December 28, 1977.

(13) Memphis. Letter from John M. Leonard, Administrator, Environmental Engineering, Division of Public Works, City of Memphis, to Linda Tuxen, Office of Toxic Substances, EPA. HEX-BCH discharge from Velsicol Chemical Company to the City of Memphis Wastewater Treatment Plant. July 24, 1984.

(14) Clark, C.S., Bjornson, H.S., Holland, J.W., et al. "Evaluation of the Health Risks Associated with the Treatment and Disposal of Municipal Wastewater and Sludge". EPA 600/1-80-030, PB 81-175945, USEPA Cincinnati, Ohio. pp. 36-43. 1981.

(15) Tennessee. Letter from Dr. Eugene W. Fowinkle, Commissioner of Public Health, State of Tennessee, to John M. Rademacher, Vice-President of Environmental, Health and Regulatory Affairs, Velsicol Chemical Corporation. Hardeman County Disposal Site. July 10, 1980.

(16) USEPA. Final and Proposed Amendments to National Oil and Hazardous Substances Contingency Plan; National Priorities List. Federal Register, September 8, 1983 (48 FR 40659).

(17) USEPA. Hazardous Waste Sites; National Priorities List, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency. August, 1983.

(18) USEPA. Hazardous Waste Site; Descriptions; National Priorities List—Final Rule, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency. August, 1983.

(19) Yurawecz, M.P., Roach, J.A.G. "Gas-Liquid Chromatographic Determination of Chlorinated Norbornene Derivatives in Fish." Journal of the Association of Official Analytical Chemists, 61(1): 26-31, 1978.

(20) USEPA. Memorandum. Hexachloronorbomadiene. David Friedman, Manager, Methods Program, Office of Solid Waste, to Jeff Davidson, Test Rules Development Branch. March 16, 1984.

V. Public Record

The EPA has established a public record of this testing decision (docket number OPTS-42060). This record includes:

(1) Federal Register Notice designating 1,2,3,4,7,7-hexachloronorbomadiene to the priority list and comments received in response thereto.

(2) Contractor reports.

(3) Communications consisting of letters, contact reports of telephone conversations, and meeting summaries.

(4) Confidential Business Information submissions by Velsicol Chemical Corporation. While part of the public record, these submissions are not available for public review.

The record, containing the basic information considered by the Agency in developing its decision, is available for

inspection in the OPTS Reading Room from 8 a.m. to 4 p.m., Monday through Friday, except legal holidays, in Rm. E-107, 401 M St., SW., Washington, D.C. 20460. The Agency will supplement this record periodically with additional relevant information received.

(Sec. 4. 90 Stat. 2003; (15 U.S.C. 2801))

Dated: November 8, 1984.

William D. Ruckelshaus,
Administrator.

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